

matter is reduced and maintained not more than -350 mV at least 5 days by adding the reducing agent and the nutritional liquid wherein the contaminated matter mixed with the reducing agent and the nutritional liquid has a water content of at least 40% by weight.

42. (New) The method of claim 41 wherein the reducing agent has a standard electrode potential ranging from -400 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, and the reducing agent is at least one species selected from the group consisting of the reduced iron, the iron-silicon alloy, the titanium alloy, the zinc alloy, the manganese alloy, the aluminum alloy, the magnesium alloy, and the calcium alloy.

43. (New) The method of claim 41 wherein the reducing agent comprises the reduced iron.

44. (New) The method of claim 41 wherein the reducing agent is at least one species selected from the group consisting of the iron-silicon alloy, a titanium-silicon alloy, a titanium-aluminum alloy, a zinc-aluminum alloy, an aluminum-zinc-calcium alloy, an aluminum-tin alloy, an aluminum-silicon alloy, a magnesium-manganese alloy and a calcium-silicon alloy.

45. (New) The method of claim 41 wherein the reducing agent is a powder having a diameter up to 500 μm .

46. (New) The method of claim 41, further comprising the step of maintaining the contaminated matter in a pH ranging from 4.5 to 9.0 subsequent to the adding step.

47. (New) The method of claim 41, further comprising the steps of adding an organic compost, a compostable organic material, a waste water containing organic matter or a waste containing organic matter to the contaminated matter and mixing thereof.

48. (New) A method for purifying soil, sediment or sludge contaminated with a halogenated

organic compound, which method comprises the step of:

adding a reducing agent to the contaminated matter, wherein the reducing agent has the standard electrode potential ranging from -445 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, and the reducing agent is at least one species selected from the group consisting of the iron-silicon alloy, the titanium alloy, the zinc alloy, the manganese alloy, the aluminum alloy, the magnesium alloy, and the calcium alloy, whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than -350 mV at least 5 days by adding the reducing agent wherein the contaminated matter mixed with the reducing agent has a water content of at least 40% by weight.

49. (New) The method of claim 48 wherein the contaminated matter prior to the addition of the reducing agent comprises 0.1 g to 100 g of an iron compound based on 1 kg of a dry weight of the contaminated matter.

50. (New) The method of claim 48 wherein the contaminated matter prior to the addition of the reducing agent comprises 1 g to 100 g of an iron compound based on 1 kg of a dry weight of the contaminated matter, and the iron compound comprises iron hydroxide ($\text{Fe}(\text{OH})_3$) or triiron tetraoxide (Fe_3O_4).

51. (New) The method of claim 49 wherein the reducing agent is at least one species selected from the group consisting of the iron-silicon alloy, titanium-silicon alloy, titanium-aluminum alloy, zinc-aluminum alloy, manganese-magnesium alloy, aluminum-zinc-calcium alloy, aluminum-tin alloy, aluminum-silicon alloy, magnesium-manganese alloy and calcium-silicon alloy.

52. (New) The method of claim 48 wherein the reducing agent is a powder having a diameter up to 500 μm .

53. (New) A method of purifying a contaminated soil, sediment or sludge containing a

halogenated compound, which method comprises the step of:

mixing a reducing agent and a water-soluble organic nutritional liquid containing a nutritional source for a heterotrophic anaerobic microorganism with the contaminated matter, the reducing agent having a standard electrode potential ranging from 130 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, wherein the mixing step including a step of adjusting the contaminated matter at pH ranging from 4.5 to 9.0, whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than -350 mV at least 5 days by adding the reducing agent and the nutritional liquid, wherein the contaminated matter mixed with the reducing agent and the nutritional liquid has a water content of at least 40% by weight.

54. (New) The method of claim 53 wherein the reducing agent is in a powder form and wherein the nutritional liquid is added to the contaminated matter and mixed thereof, and then the reducing agent is added to the resultant mixture and further mixed thereof.

55. (New) The method of claim 53 wherein the reducing agent is a powder having a diameter up to 500 μm .

56. (New) The method of claim 53 wherein the reducing agent is at least one species selected from the group consisting of reduced iron, iron-silicon alloy, titanium alloy, zinc alloy, manganese alloy, aluminum alloy, magnesium alloy and calcium alloy.

57. (New) The method of claim 53 wherein 1 to 10 percent by volume, based on the contaminated matter, of the nutritional liquid is added to the contaminated matter and mixed thereof as a first step; and then an amount larger than the amount of the first step of the nutritional liquid is added to the contaminated matter and mixed thereof as a second step.

58. (New) The method of claim 53 wherein:
1 to 5 percent by volume, based on the contaminated matter, of the nutritional liquid is added to the

contaminated matter and mixed thereof as a first step;
the nutritional liquid is added to the contaminated matter and mixed thereof as a second step wherein a sum of the nutritional liquids added in the first step and the second step amounts 5 to 10 percent by volume, based on the contaminated matter, of the contaminated liquid; and
the nutritional liquid is added to the contaminated matter and mixed thereof as a third step wherein an amount of the nutritional liquid added in the third step is more than an amount of the nutritional liquid added in either the first step or the second step.

59. (New) A method for purifying soil, sediment or sludge contaminated with a halogenated organic compound, which method comprises the step of:

adding a reducing agent and a water-soluble organic nutritional liquid for a heterotrophic anaerobic microorganism to the contaminated matter, the reducing agent having a standard electrode potential ranging from 130 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than +130 mV at least 5 days by adding the reducing agent and the nutritional liquid, wherein the contaminated matter mixed with the reducing agent and the nutritional liquid has a water content of at least 40% by weight.

60. (New) The method of claim 59 wherein the reducing agent is an organic acid or derivative thereof, hypophosphorous acid or derivative thereof, or a sulfide salt.

61. (New) The method of claim 41 wherein the reducing agent is added in the form of slurry or added to the contaminated matter in the form of slurry.

62. (New) A method for purifying soil, sediment or sludge contaminated with a halogenated organic compound, which method comprises the step of:

adding a liquid containing a reducing agent to the contaminated matter, the reducing agent being a water-soluble compound having a standard electrode potential ranging from 130 mV to -2400

mV at 25°C with respect to the standard hydrogen electrode, whereby an oxidation reduction potential of the contaminated matter reduced and maintained not more than +130 mV at least 5 days by adding the liquid, wherein the contaminated matter mixed with the liquid has a water content of at least 40% by weight.

63. (New) The method of claim 62 wherein the reducing agent is an organic acid or derivative thereof, hypophosphorous acid or derivative thereof, or a sulfide salt.

64. (New) The method of claim 48 wherein the reducing agent is added in the form of slurry or added to the contaminated matter in the form of slurry.

65. (New) The method according to claim 41 wherein halogenated organic compounds are completely eliminated.

66. (New) A method for purifying soil, sediment or sludge contaminated with a halogenated organic compound, which method comprises the step of:

adding a reducing agent and a water-soluble organic nutritional liquid for a heterotrophic anaerobic microorganism to the contaminated matter, wherein the reducing agent has the standard electrode potential ranging from 130 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, and is at least one species selected from the group consisting of the iron-silicon alloy, the titanium alloy, the zinc alloy, the manganese alloy, the aluminum alloy, the magnesium alloy, and the calcium alloy, wherein the contaminated matter mixed with the reducing agent and the nutritional liquid has a water content of at least 40% by weight.

67. (New) A method for purifying soil, sediment or sludge contaminated with a halogenated organic compound, which method comprises the step of:

adding a reducing agent and water to the contaminated matter, wherein the reducing agent has the standard electrode potential ranging from -445 mV to -2400 mV at 25°C with respect to the standard

hydrogen electrode, and is at least one species selected from the group consisting of the iron-silicon alloy, the titanium alloy, the zinc alloy, the manganese alloy, the aluminum alloy, the magnesium alloy, and the calcium alloy, wherein the mixing step including a step of adjusting the contaminated matter at pH ranging from 4.5 to 9.0, whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than -350 mV at least 5 days by adding the reducing agent and water, wherein the contaminated matter mixed with the reducing agent and water has a water content of at least 40% by weight.

68. (New) A method of purifying a contaminated soil, sediment or sludge containing a halogenated compound, which method comprises the step of:

adding a reducing agent and a water-soluble organic nutritional liquid containing a nutritional source for a heterotrophic anaerobic microorganism to the contaminated matter, the reducing agent being a water-soluble compound and having a standard electrode potential ranging from 130 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, wherein the mixing step including a step of adjusting the contaminated matter at pH ranging from 4.5 to 9.0, whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than 130 mV at least 5 days by adding the reducing agent and the nutritional liquid, wherein the contaminated matter mixed with the reducing agent and the nutritional liquid has a water content of at least 40% by weight.

69. (New) A method of purifying a contaminated soil, sediment or sludge containing a halogenated compound, which method comprises the step of:

adding a liquid containing a water-soluble reducing agent to the contaminated matter, the liquid containing the reducing agent having a standard electrode potential ranging from 130 mV to -2400 mV at 25°C with respect to the standard hydrogen electrode, wherein the mixing step including a step of adjusting the contaminated matter at pH ranging from 4.5 to 9.0 whereby an oxidation reduction potential of the contaminated matter is reduced and maintained not more than 130 mV at least 5 days by adding the liquid containing the reducing agent, wherein the contaminated matter mixed with the liquid has a water content of at least 40% by weight.